

U.S. Patent Appln. Serial No.: 09/830,560  
Atty. Docket No.: 206253US-3 PCT  
Reply to Office Action of April 17, 2003

**Amendments to the Specification:**

Please replace the paragraph beginning at page 13, line 16, with the following rewritten paragraph:

C<sub>1</sub> For example, in the chair type massaging machine, there is a type in which the therapeutic member in the seatback portion is automatically moved downward from the upper portion portion to the lower portion, the load applied to the therapeutic member when the therapeutic member abuts to the shoulder is detected, and the position where the load is detected is regarded as the position of shoulders (related art 1).

Please replace the paragraph beginning at page 15, line 12, with the following rewritten paragraph:

C<sub>2</sub> On the other hand, the related art 2 does not have problems as in the related art 1, since the user selects a candidate for the shoulder position that matches with the position of his/her shoulder by manual operation, and thus the ~~use~~ user is involved in setting of the shoulder position.

Please replace the paragraph beginning at page 19, line 9, with the following rewritten paragraph:

C<sub>3</sub> With the problems described above in view, the present invention provides a massaging apparatus that can determine the ~~sholder~~ shoulder position of the user with respect to the massaging apparatus automatically and accurately in a simple construction.

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Please replace the paragraph beginning at page 21, line 24, with the following rewritten paragraph:

C4 The ~~massage~~ massaging apparatus of this type is constructed in such a manner that the arm is pivoted to the front and back, or is moved to the left and the right by the pressure in the fore-and-aft directions or in the lateral direction applied to the therapeutic member from the body, and the displacement of the spring compressed by the pivotal position or the movement in the left and the right directions is detected by the first and the second sensors, whereby the construction is disadvantageously complex because there are pluralities of members such as an arm, a spring, and the like interposed between the first and second sensors and the therapeutic member, and the pressure is absorbed by the deformation of the arm or the like or the rattling or the play at the connecting portion between those members, thereby impairing the accuracy of detection.

Please replace the paragraph beginning at page 23, line 15, with the following rewritten paragraph:

C5 It is another object of the present invention ~~is~~ to provide a miniaturized massaging apparatus at low cost in which the detection of the kneading strength or the like is enabled by providing a detector for detecting the load in the lateral direction with respect to the therapeutic member and simultaneously the level of the user's shoulder or the like is determined by means of the detector.

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Please replace the paragraph beginning at page 32, line 9, with the following rewritten paragraph:

C6  
The present invention is characterized in that the therapeutic member moves upward a plurality of time and the position of the specific portion is detected by the position detecting means in every process of upward movement, and when the detected values are in close agreement with each other, the value last detected is recognized as the position of ~~said~~ the specific portion.

Please replace the paragraphs beginning at page 54, line 15, with the following rewritten paragraphs:

C7  
The motion shafts 19, 20 are laterally arranged in parallel with each other and rotatably supported on the case of the drive unit 21 via the bearings respectively. These motion shafts 19, 20 are adapted in such a manner that one of these two shafts 19, 20 is selected at a transmission mechanism 11 to receive rotational motion from the massage motor 10 to rotate in the directions shown by the arrows A or B in Fig. ~~11~~ 7.

The rapping motion shaft 20 is provided with an eccentric shaft portions 20A, 20A that are off-centered in the opposite direction from each other on both ends, and the kneading motion shaft 19 is provided with a inclined shaft portions 19A, 19A on both ends. The eccentric shaft portion 20A of the rapping motion shaft 20 and the inclined shaft portion 19A of the kneading motion shaft 19 are connected by a linkage 28 as shown in Fig. 6. The linkage 28 comprises a plate-shape drive arm 25, a ball joint 29 connected to the drive arm 25, and a connecting arm 31 connected to the shaft portion of the ball joint 29 by a pin 30.

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The drive arm 25 is rotatably supported on the inclined shaft portion 19A, and the connecting arm 31 is pivotally mounted on the eccentric shaft portion 20A.

CF  
C7  
In this arrangement, when the rapping motion shaft 20 rotates in the direction A, the eccentric shaft portion 20A of the rapping motion shaft 20 allows the therapeutic members 8, 9 to reciprocate in the direction A1 (fore-and-aft direction as shown in Fig. 5) via the connecting arm 31, the ball joint 29, the drive arm 25, and the supporting arm 26, and the therapeutic members 8, 9 make a rapping movement. Since one of the eccentric shaft portions 20A is off-centered in the opposite direction from the other one, the therapeutic members 8, 9 on the left side and the right side make rapping motion alternately.

On the other hand, when the kneading motion shaft 19 receives a rotational power, the inclined shaft portion 19A rotates along a conical surface, and thus the drive arm 25 reciprocates with the ball joint 29 as a fulcrum, and consequently, the therapeutic members 8, 9 on the left side and the right side make reciprocated pivotal movement in the direction of B1 (in the lateral direction as shown in Fig. 5) so as to move toward and away from each other.

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Please replace the paragraph beginning at page 56, line 15, with the following rewritten paragraph:

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C8  
On the end surfaces of the screw gear 36 and of the worm 37 on the guide shaft 35 facing toward each other, there are formed engagement tooth portions 36A, 37A that serve as clutches respectively. The guide shaft 35 is formed with a trapezoidal screw thread 39 on the portion between the screw gear 36 and the worm 37, on which a movable helical gear 40 is

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C8 mounted in engagement with its inner surface. ~~The both~~ Both end surfaces of the movable helical gear 40 is are formed with engagement tooth portions 40A, 40A to be engaged and disengaged with the engagement tooth portions 36A, 37A. A rotating drive shaft 43 is provided in parallel with the guide shaft 35 and adapted to be switched to rotate in the directions shown by the arrows P or Q by the massage motor 10 via a pulley or a belt.

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Please replace the paragraph beginning at page 60, line 4, with the following rewritten paragraph:

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C9 As shown in Fig. 2 and Fig. 1, the pair of left and right clipping bodies 51 of the drive arm 25 are provided with through holes 56 so as to extend therethrough in the lateral direction. The through hole 56 formed on one of the clipping bodies 51 is provided with a light emitting element (light emitting diode) 57 and the through hole 56 formed on the other one of the clipping bodies 51 is provided with a light receiving element (light receiving transistor) 58. The light emitting element 57 illuminates light toward the light receiving element 58, so that the light receiving element 58 is turned on when it ~~received~~ receives light from the light emitting element 57 and turned off when light from the light emitting element 57 is blocked by the supporting arm 26. The optical sensor having the light emitting element 57 and the light receiving element 58 constitutes a pivotal movement detecting sensor 60 for detecting that the supporting arm 26 reached a prescribed range of pivotal movement with respect to the drive arm 25.

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Please replace the paragraph beginning at page 62, line 11, with the following rewritten paragraph:

C10  
In other words, as shown in Fig. 9, when the center of connection of the supporting arm 26 with respect to the drive arm 25 is designated as the center of connection O1, the center of mounting of the supporting arm 26 with respect to the first therapeutic member 8 as the first center of mounting O2, the center of mounting of the supporting arm 26 with respect to the second therapeutic member 9 as the second center of mounting O3, the line segment between the first center of mounting O2 and the second center of mounting O3 as the end-to-end connecting line A, the line segment between the first center of mounting O2 and the center of connection O1 as the first center-to-center connecting line B, the line segment between the second center of mounting O3 and the center of connection O1 as the second center-to-center connecting line C, the contact point at which the parallel line D in parallel with the end-to-end connecting line A touches the inner edge 26a of the supporting arm 26 as the inner contact point P, and the line segment connecting the first center of mounting O2 with the inner contact point P as the line segment E, the supporting arm 26 is bent so that the angle  $\theta_1$  formed between the end-to-end connecting line A and the line segment E becomes larger than the angle  $\theta_2$  formed between the first center-to-center connecting line B and the line segment E, and the distance between the center of connection O1 and the first center of mounting O2 is determined to be almost the same as the distance between the center of connection O1 and the second center of mounting O3.

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Please replace the paragraph beginning at page 63, line 23, with the following rewritten paragraph:

C11  
As shown in Fig. 11, when the center of mounting of the supporting arm 26 with respect to the first therapeutic member 8 is designated as the first center of mounting O2, the center of mounting of the supporting arm 26 with respect to the second therapeutic member 9 as the second center of mounting O3, the line segment connecting between the first center of mounting O2 and the second center of mounting O3 as the end-to-end connecting line A, the contact point at which the parallel line D is parallel with the end-to-end connecting line A touches the inner edge 26a of the supporting arm 26 as the inner contact point P, the line segment of the tangent line passing through the inner contact point P and touching the first therapeutic member 8 on the side of the inner edge 26a of the supporting arm 26 as the first tangent line I from the inner contact point P, and the line segment of the tangent line passing through the inner contact point P and touching the second therapeutic member 9 on the side of the inner edge 26a of the supporting arm 26 as the second tangent line J from the inner contact point P, the supporting arm 26 is bent in such a manner that the angle  $\theta 4$  between the first tangent line I from the inner contact point P and the second tangent line J from the inner contact point P forms generally a right angle.